Business Case White Paper Series

e-Accessible Culture

Global Initiative for Inclusive Information and Communication Technologies
e-Accessible Culture

A G3ict Business Case White Paper Series

Spring 2018
Acknowledgments
This G3ICT White Paper picks up and builds on the topics addressed at the 11th European e-Accessibility Forum, held on 19 June 2017 at the Cité des Sciences in Paris. Around 200 professionals, association members and scholars from around the world gathered on this occasion to discuss e-Accessible Culture. Fourteen of the conference speakers and one further expert, all actively involved in e-Accessibility, have accepted the invitation to update the opinions and points-of-view expressed on this occasion in order to shape a review on this question.

G3ict wishes to express its sincere appreciation to the organizers of the European e-Accessibility Forum, Univercience and BrailleNet for making the proceedings of the European e-Accessibility Forum available for publication by G3ict and to Dominique Burger and Katie Durand for their invaluable editorial contributions in developing the concept of this white paper.

About G3ict
G3ict is an advocacy initiative launched in December 2006 by the United Nations Global Alliance for ICT and Development, in cooperation with the Secretariat for the Convention on the Rights of Persons with Disabilities at UNDESA. Its mission is to facilitate and support the implementation of the dispositions of the Convention on the Rights of Persons with Disabilities (CRPD) promoting digital accessibility and assistive technologies. Participating organizations include industry, academia, the public sector and organizations representing persons with disabilities. G3ict organizes or contributes to awareness-raising and capacity building programs for policy makers in cooperation with international organizations, such as the ITU, ILO, UNESCO, UNITAR, UNESCAP, UN Global Compact and the World Bank. It produces in cooperation with Disabled People’s International the CRPD ICT Accessibility Progress Report which provides in-depth benchmarking and analysis of the degree to which countries implement digital accessibility.

In 2011, G3ict launched the M-Enabling Summit Series (www.m-enabling.com) to promote accessible mobile phones and services for persons with disabilities and seniors, in cooperation with the ITU and the FCC (U.S. Federal Communications Commission). G3ict produces jointly with ITU the e-Accessibility Policy Toolkit for Persons with Disabilities (www.e-accessibilitytoolkit.org), as well as specialized reports which are widely used around the world by policy makers involved in the implementation of the CRPD. In 2016, G3ict acquired the activities of IAAP, the International Association of Accessibility Professionals which offers professional training and certification in ICT accessibility worldwide. G3ict is funded by contributions from corporations, foundations and individual members. Its programs are hosted by international organizations, governments, universities and foundations around the world.

For additional information on G3ict, visit www.g3ict.org

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Foreword

Culture brings people together around shared interests and plays a pivotal role in promoting social cohesion. It strengthens identities and encourages participation, recognition and legitimacy at both an individual and collective level.

Cultural institutions have a fundamental role to play in fostering inclusive and cohesive societies. In an effort to better fulfil their core missions, organizations are increasingly adopting strategies of inclusion and seeking new ways to embrace, engage and learn from a society that is more diverse than the one they were established for. Museums, libraries, monuments and venues for art, music, cinema, dance, opera and drama are exploring the role digital technologies can play in removing barriers and increasing opportunity and participation for all people, including people with disabilities.

Beyond the cultural institution, makers and creators are experimenting with new and collaborative ways to increase engagement in cultural activities such as drama, visual arts and music. Technology can help support, harness and share these efforts and go towards shaping a culture that is truly representative of all people.

This also holds true for cultural products that are produced, packaged and distributed by private and public organizations. Television and radio programs, books, magazines and newspapers are all cultural assets that contribute to our individual and collective identity and that are responsible for both forging and dividing societies. Without full access to this capital, people with disabilities will not be able to engage in society on an equal footing. User groups and digital accessibility specialists are working together with public service providers and the cultural industry to optimize the production and distribution of “born-accessible” content available through mainstream channels at the same time, at equal cost and with the same attention to user experience.

The technical challenges faced by the cultural sector are as varied as the content, devices, uses and the ways in which humans interact with technology. This G3ict White Paper presents a small selection of pioneering initiatives in this area and makes the case for going above and beyond the needs of disabled users in order to embrace a renewed understanding of cultural life.
Part 1 Building inclusive cultural services from the bottom up

The French Ministry of Culture’s efforts to increase access to culture through digital technologies

By Sandrine Sophys-Véret, Chargée de mission Culture Handicap, French Ministry of Culture

Sandrine Sophys-Véret is in charge of the Culture and Handicap program within the Department of Education and Artistic and Cultural Development and the Department for the Coordination of Cultural Policies and Innovation of the French Ministry of Culture. She coordinates French policy and inter-ministerial relations on access to culture and artistic practices for people with disabilities. In this capacity, she is responsible for the work undertaken by the Commission Nationale Culture-Handicap.

A national commission for culture and disability

Each and every one of us, regardless of ability, should be able to access all aspects of culture: art and heritage (museums, architecture, monuments, archives, etc.), artistic activities (fine art, dance, theatre, etc.) and cultural products and services (film, television, radio, theater and books). Each individual should also be given the opportunity to pursue a career in the cultural sector.

It is this principle that led the French Ministry of Culture to create the Commission Nationale Culture-Handicap (CNCH or national commission for culture and disability) in 2001. Every two years the Minister of Culture and the Minister for Disability meet with representatives from disability charities, cultural institutions and user groups to review and discuss efforts made to increase access to culture for people with disabilities and to explore how changes to policy and legislation might help to improve the situation.

In addition to keeping close tabs on how cultural institutions are fulfilling their legal requirements with regards to physical access, the CNCH reviews digital outputs to see whether they comply with national accessibility standards. This article gives an overview of the current situation in France and the Ministry’s role in supporting an inclusive cultural landscape.
French legislation supporting access to culture for people with disabilities

The implementation of best practice in digital accessibility is written into two key pieces of French legislation:

- **The Loi n° 2005-102 pour l’égalité des droits et des chances, la participation et la citoyenneté des personnes handicapées** (law on equal rights and opportunities, participation and citizenship of people with disabilities) stipulates that all public websites must respect international web accessibility standards, and a subsequent decree (n°2009-546) defines the technical requirements for implementing standards.

- **The Loi n° 2006-961 du 1er août 2006 relative au droits auteur et aux droits voisins dans la société de l’information** (law on copyright and related protection in an information society) introduced a copyright exception to support people with disabilities and allow authorized organizations to make and distribute copies of works in accessible formats without prior authorization from rights holders. This was amended in 2016 to accommodate a broader understanding of print disabilities, and to facilitate the production and circulation of accessible documents.

These legislative texts provide a solid framework on which to build a fully inclusive cultural environment.

The role of digital technologies in improving access to culture

**Museums, galleries and heritage sites**

**Onsite digital visitor aids**

Digital technologies provide greater opportunities for increasingly tailormade visitor experiences as users are able to select their preferred means of accessing content.

A number of fixed and mobile digital solutions have been developed in cultural venues across France to support visitors with disabilities. Institutions that have been particularly active in this domain include the Centre des Monuments Nationaux (that has developed such solutions as robotic aids to support visitors with mobility issues and interactive labels1), the Grand Palais (that has experimented with connected glasses to provide signed information for deaf visitors) and the Musée de l’Homme (that has implemented interactive labels and displays for people with learning disabilities).

**Websites**

The Ministry of Culture is currently conducting a study into the accessibility of cultural venue websites, and the initial findings show that there is still some way to go. The results will help the Commission to pinpoint failings and pull together a road map to help support institutions to improve the accessibility of their online offering.

**Artistic activities**

**Performing arts**

A study conducted by the Ministry of Culture revealed the need to increase efforts in France to provide audio description, subtitling and captioning for live performances. The approach must be adapted according to the performance, the venue, the audience and the funding structure.

**Cinema**

France’s Centre National du Cinéma (National Centre for Cinema) is very active both in improving access to theaters and to film. The digitization of films increases opportunities to add subtitles and audio description to the files natively and to provide these at film projections.

**Cultural products and services**

**Television and radio**

The France Télévisions Group has taken a number of measures to improve the accessibility of its programs through audio-description, subtitling and sign language, and is involved in a cross-sector R&D project to develop an accessible digital player².

**Books**

The question of improving access to books and reading is one of the Ministry’s priorities. Recent changes to legislation should improve the production of accessible books and make these available to larger numbers of print-disabled readers. Through the PLATON platform, the Bibliothèque Nationale Française (French national library) plays a pivotal role in the coordination and sharing of accessible versions of publications. The Ministry will also work with publishers to support them in the production of born-accessible digital books which hold great promise for all stakeholders.

**Film**

In 2012, the Centre National du Cinéma put a funding mechanism in place to support the digitization of historic films. Of the 602 films that have received funding since 2012, 582 are accessible in audio-description. The CNC also provides financial support for films on DVD, Blu-ray and VOD to increase accessibility and broaden audiences.

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1. See Alexandra Dromard’s article in this paper, «Digital accessibility at the Centre des Monuments Nationaux».
2. See article by Mathieu Parmentier in this paper «Building accessible media at France Télévisions». 
Supporting an inclusive cultural sector

Financial support
In 2010, the Ministry of Culture launched an annual call for projects, with a budget of €500 000, to support the development of innovative cultural services designed to increase access to creation and heritage.

Training
In order to create inclusive public services, cultural sector professionals must receive the necessary training. The Ministry works closely with cultural sector training providers to ensure that accessibility is written into undergraduate and post-graduate courses.

Documentation

Partnerships with the IT industry
The Ministry encourages cultural institutions to develop partnerships with IT sector companies who can offer technical expertise and innovative solutions in exchange for a greater understanding of the needs of cultural organizations.

Partnerships with Disability organizations
Cross-sector workshops and meetups, such as those organized by BrailleNet, are an effective way to get project managers, industry providers, and end-users together to look at how to best meet the needs of users. Participative events such as hackathons may also provide a welcome opportunity to develop and test new ideas.

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Part 1 Building inclusive cultural services from the bottom up

Producing and distributing accessible e-books: the Swedish model

By Jesper Klein, Chief innovation officer, Swedish Agency for Accessible Media and Chairman of the DAISY Consortium board

Jesper was head of R&D at the Swedish Agency for Accessible Media (MTM) and led Sweden’s efforts to digitize accessible books and newspapers, resulting, among other things, in the launch of the Legimus online library for people with disabilities in Sweden in 2013. As innovation leader and part of MTM’s management, Jesper is specialized in analyzing the effects of digital reading on mainstream publishing. As chair of the Daisy Consortium board, Jesper contributes to the development of open standards and practices for a better way to read and publish in the digital era globally.

Background

The global book famine

People should have equal access to information and knowledge regardless of ability. This is a right confirmed by the UN Convention on the Rights of Persons with Disabilities. To be able to access information enables and empowers people to participate in education, news, work and culture: the fabric of a democratic society.

The World Blind Union (WBU) reports a “global book famine” among people with blindness and low vision, with only 5-10% of all published books available in accessible formats such as Braille, audio and large print.

People with print disabilities

It’s not only people with low vision or blindness who have great difficulties reading print materials. The term “print disabilities” also includes physical disabilities, which can affect one’s ability to hold or turn the pages of a book, and also learning disabilities and cognitive disabilities such as dyslexia, attention deficit hyperactivity disorder (ADHD), autism, intellectual disabilities, dementia and aphasia. So how many people have print disabilities? Research is inconsistent, but a moderate estimate is 5% of the population.

Libraries serving people with print disabilities

In the 20th century, the task of producing accessible books was taken on by specialized providers, often charities or public-funded organizations. Accessible reading materials were provided as audio, Braille or electronic text files and made available to people with print disabilities through library services.

This process tends to rely on a legal framework of copyright exceptions which grant certain institutions the right to produce content in accessible formats and provide them to people with print disabilities without having to pay royalties or clear rights for individual titles. The UN/WIPO-initiated Marrakesh treaty is now taking effect in an increasing number of countries and will extend the parts of the world with similar copyright exceptions in place.

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The tasks undertaken by these specialized adaptation providers tend to be as follows:

**Content production and acquisition**
- The production of human-narrated talking books with navigable chapters and page numbers, sometimes with synchronized text and audio;
- The conversion of publisher source files or scanned books to produce electronic books that convert text to synthetic speech, Braille, electronic text and large print;
- The acquisition of accessible titles from other libraries or adaptation centers;
- The production of niche publications such as Braille music notation, books including tactile images or sign-language.

**Library services**
Books are made available as library loans, for free or through an annual membership fee of between 50 and 100 USD.

**Delivery**
- On CD/USB or paper via a postal service using cecogrames (postage tends to be publically subsidized so free to the user);
- Online delivery through streaming or for download via a web catalogue or app-based service.

These providers have evolved significantly over the last few decades thanks to the arrival of new technologies, open international standards, online distribution channels, improved marketing strategies and partnerships with other stakeholders in the reading arena such as publishers and libraries. But resources in these organizations tend to be scarce, and in many cases only sufficient to publish small quantities of books that reach only a fragment of the target group.

**Born digital, born accessible**
The wave of digitization, the introduction of the electronic book and the rise of audio book streaming means conditions are changing. Under the slogan “born digital, born accessible”, for the first time in history, a universal design-based path to accessible reading is becoming a reality in many countries.

The EPUB3 standard, developed by the International Digital Publishing Forum (IDPF), is the mainstream global e-book standard following PDF and EPUB2 and has all of the important accessibility requirements built into the start. But despite the wonderful opportunities that digital publishing and assistive technology have to offer, there is still long way to go before people with disabilities can access all their reading materials at the same time, at equal cost, through the same distribution channels with the same reading systems and feature-rich user experience as everyone else.

### The DAISY Consortium
The DAISY Consortium was founded in 1996 as an international initiative in technical standards for digital accessible books. The founding organizations shared the common goal of creating a better way to read and publish. Since then, the DAISY Consortium has been working successfully in partnership with libraries serving people with print disabilities, mainstream publishers, disability organizations, giant tech corporations and assistive technology companies.

Since the early 2000s, the DAISY standard has been widely adopted in the industrialized world by organizations specialized in accessible reading. However, for the past ten years the DAISY Consortium’s core strategy has been to concentrate its efforts on working with mainstream standards in order to draw maximum benefits from the digital transformation happening in the mainstream.

This is based on a three-pronged approach:
- Supporting the work of its members through standards, open source tools and best practice for accessible reading services;
- Supporting and influencing mainstream publishing to make this more inclusive;
- Extending the areas that benefit from accessible reading – focusing on developing countries through partnership with UN agencies, the World Blind Union and the International Council for Education of People with Visual Impairment (ICEVI).

### Accessible reading in Sweden
Sweden, a country of 10 million in Northern Europe, is known in the accessible reading arena as one of the countries that initiated the formation of the DAISY Consortium in the 1990s. With at least 60 years of active inclusion policies and publicly-funded accessible reading services, Sweden is a good example of an early adopter of digital accessible reading as demonstrated by the statistics:
- 25 % of published books in Swedish are made available in accessible formats;
- There are approximately 100,000 active users of accessible reading services;
- Around 2 million talking books are borrowed each year;
- 2/3 of content delivery takes place online.

### Legimus – the Swedish digital library for people with print disabilities
The Swedish agency for accessible media (MTM) is commissioned and funded by the Swedish Ministry of Culture to make reading accessible for people with print disabilities. It employs 100 people and receives €20 million in funding. One of the agency’s core activities is the online service Legimus (Latin for “we read”), a digital library of accessible books for people of all ages with print disabilities.

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11. www.daisy.org/about-us
12. www.mtm.se/english
The production of talking books, Braille books, accessible e-books and tactile images is mainly handled by MTM, but some titles are acquired from other adaptation organizations. In total around 7000 new titles are added to the collection annually, of which approximately 2500 are human-narrated talking books. MTM’s production is primarily based on the provision of source files by publishers. Content markup, conversion and quality assurance are outsourced to partner organizations.

The service was made available on iOS and Android in 2013, giving members constant unlimited access to over 120000 digital talking books. Library members are young, and the service is particularly popular with 8 to 19 year olds and dyslexic users.

MTM has been working actively for decades with public libraries in municipalities, schools, universities and hospitals to reach out to its target group. The model has proved successful, with two thirds of content distribution taking place online and the promotion and support carried out by the thousands of staff active in the library network.

**Born-accessible reading**

Despite the fact that education levels and internet use in Sweden are high, it has been relatively slow in adopting the commercial e-book; a common phenomenon in small language area markets. This means accessible reading is still highly dependent on the publicly-funded services provided by government agencies from the cultural and educational sectors. The tide, however, is turning with e-book and audio book sales doubling in 2016, and it is likely that the inclusion of people with print disabilities will increasingly happen in the mainstream.
Part 1 Building inclusive cultural services from the bottom up

OPALINe, a Research & Development project for accessible books

By Alex Bernier, Director, BrailleNet

Alex Bernier graduated with a degree in computer engineering from the National Institute of Applied Sciences (INSA) in Rennes. He has worked on various projects related to books and digital libraries. He is responsible for the Accessible Francophone Digital Library (BNFA) and BrailleNet’s research and development program including a project aimed at improving the accessibility of scientific and technical documents for the visually impaired.

BrailleNet: A long history of accessible reading

Taking advantage of the opportunities brought about by digital technologies, BrailleNet develops tools and services that facilitate the production, distribution and reading of accessible digital books.

As early as 2001, BrailleNet put in place the Hélène platform to encourage charities and education support services involved in producing accessible adaptations to share their output. In 2002, the DAISY 3.0 Standard was adopted and in 2006, BrailleNet launched the Hélène Library, France’s first secure distribution platform for digital books. Today over 80 partners upload their accessible books and download accessible titles provided by partner organizations.

In 2012, in partnership with the Groupement des Intellectuels Aveugles ou Amblyopes (group of blind or partially sighted Intellectuals) and the Association pour le Bien des Aveugles et des Malvoyants (association for the blind and visually impaired), BrailleNet created the BNFA, a digital library service for people with print disabilities. Built on the Hélène Library, it was intended to provide a new means of sharing and widening the availability of accessible titles, and incorporating talking books. Today over 5,500 subscribers have access to over 45,000 titles in audio, digital Braille and large print. Access to the library is free and available to those who are classified as disabled according France’s copyright law.

BrailleNet is also France’s primary producer of accessible books (around 5,300 titles in 2017). New books are added each day to the Hélène platform and the BNFA digital library.

Very few “born-accessible” books available on the market today

It is estimated that only around 8% of books available to buy in French book shops are available somewhere in an accessible format (Braille, audio, large print, etc.). Since 2010, the copyright exception in France has made it easier for accredited adaptation organizations such as BrailleNet to request source files from publishers. However, the lack of accessible books available to the print-disabled is still very alarming and this is primarily down to economical, legal and technical issues.
Today, producing mainstream digital books that are born-accessible is on the agenda, but the process is very much in the experimental phase. The French Ministry of Culture and the French publishers association (SNE) are working with BrailleNet to increase support for publishers in this area, but it may be some time before fully accessible titles are widely available on the market.

While the onus on supporting access requirements shifts to publishers for much of their output, titles with complex layout and content will continue to require the input and expertise of adaptation services.

At present, there are a multitude of adaptation services with very little centralized coordination. Much of the markup needed to structure digital books is added manually. For complex publications this can be very costly.

Whether it be publishers or adaptation agencies, both parties are lacking in robust and affordable tools to assist them in the production of fully accessible titles and help them to work more effectively together.

**Increasing productivity**

The OPALIne project (“Outils pour l’accessibilité des livres numériques”, or tools for the production of accessible digital books) is a technical response to this problem. Funded by the Bpifrance to the tune of €450,000 (for a total budget of €1,000,000), the project brings together four organizations:

- BrailleNet (project lead who will be involved in all phases of the project)
- Inria (France’s national research body for computing, and in particular the AlMaNaCh department specialized in automated language processing);
- EDRLab (a non-profit organization responsible for promoting the EPUB format in Europe);
- FeniXX (a company that digitizes and sells 20th century publications that are no longer available in print).

The project hopes to build a set of tools that will enable the scaling up of accessible book production which is today running at limited capacity. However, this technical solution will only be effective if supported by training to ensure that adaptation professionals have a solid grounding in the technology of today (XML, EPUB, etc.). A financial commitment from the government similar to that made in relation to mass digitization of publications by the BnF and the publishing sector is needed to ensure adaptation organizations are sufficiently armed to fight the “book famine”.

The project will set out to develop a suite of tools designed to improve productivity, including:

- In partnership with Inria, a component to automatically enrich and mark up digital books to speed up certain adaptation tasks. This tool will use machine learning based on models of existing structured books.
- A platform for collaborative adaptation which will allow several people to work on a single title at the same time. This platform will also enable different groups of “adaptors” to enrich and correct the document.
- A tool for Braille transcription (digital and print) with full support for French Braille code;
- With EDRLab, tools to support auditing and quality assurance for accessible digital books;
- With EDRLab, reading apps for mobile and PC.
Part 2 Disability: a driver for creativity and innovation

Disability as a driver of creativity in music: BrutPop

Interview with David Lemoine and Antoine Capet, founders of BrutPop

BrutPop was founded by musician David Lemoine and sound engineer and special needs teacher Antoine Capet. For 7 years they have been organizing experimental music workshops with young people with autism and special needs. They aim to transform their passion for underground music and DIY open solutions into something useful.

David Lemoine has a degree in Political Sciences and Sociology from the Universities of Bordeaux and Barcelona. A singer and composer, he has performed in such venues as PS1/MoMa in New York, the Villa Medici in Rome and the Cité de la Musique, the Palais de Tokyo and the Centre Pompidou in Paris.

Working as a special needs teacher for almost 15 years, Antoine Capet has worked primarily with people with disabilities including cerebral palsy, learning disabilities and autism. Antoine is also active on the Parisian art scene, founding the arts magazine Entrisme (2009-2011), organizing concerts and working on a number of multimedia projects.

How does BrutPop encourage the use of digital technology to improve access to music making for people with disabilities?

The fact that technology is a facilitator for improving access to artistic activities is now widely recognized across the culture and health sectors. Museums, live music venues, art schools, music schools, disability charities and centers for health and social care are all involved in discussions around this topic.

BrutPop is a small non-profit organization supporting access to music-making for people with disabilities, particularly people with autism and severe learning disabilities. We do this primarily through experimental music workshops, many held in care facilities, in which we give participants the opportunity to express themselves creatively.

Built around simple, ‘low-tech’ solutions that are cheap to make and easy to use, these workshops offer a very new way to engage with music. All of our solutions are developed in partnership with FabLabs, hackerspaces and cultural organizations such as the Gaité Lyrique in Paris.

13. A fab lab (fabrication laboratory) is a small-scale workshop offering an array of flexible computer-controlled tools to enable individuals to make technology-enabled products. The fab lab movement is closely aligned with the DIY, the open source hardware and the free and open source movement, and shares philosophy as well as technology with them. [Source: Wikipedia]

14. A hackerspace (also referred to as a hacklab, hackspace or makerspace) is a community-operated, often not for profit, work space where people with common interests, often in computers, machining, technology, science, digital art or electronic art, can meet, socialize and collaborate. [Source: Wikipedia]
Concurrently we organize a number of events such as small festivals or exhibitions in Paris, Lyon, Marseille and Brussels to showcase the work produced with musicians with severe learning disabilities. In 2016 we were the subject of a documentary produced by France Télévisions entitled, *Musique Brute, handicap et contre culture* (Musique brute, disability and counter culture). Among other things, this film highlights how crucial fab labs are to our work, allowing us to develop solutions that best meet the needs of our users.

Digital technology is not central to all of our solutions, but it provides a new means to share our work. All of our instruments and solutions are open source and we encourage institutions and music therapists to download the blueprints and use them in their work. Rather than sitting in the hands of a few professionals and occupational therapists, tried and tested solutions can potentially reach a wider audience and have a greater impact. In sectors that suffer from stringent budgets, with a growing priority given to social care and support, this approach offers an opportunity to increase access to music practice.

“Maker Culture” and the birth of fab labs are central to your working practices. Could you explain what these terms mean and how they support and shape your work?

“Maker Culture” is born out of standard DIY practice, but conducted in a group and, in the digital age, with the support of new technologies and the aspiration to share one’s creations. The idea is to demystify the role of the all-powerful engineer, and reclaim the notion that anyone can become an inventor and craftsman.

The maker philosophy has spread through a number of small spaces. Today these fall into different categories: hackerspaces, which are informal spaces, fab labs which focus on sharing open source solutions for the start-up community, and fab labs which are hosted by larger organizations cultivating a new and collaborative approach to their research and development activities.

BrutPop has relied heavily on fab labs since its creation, initially to develop instruments, and then to develop projects with partners from the culture and health sectors. Spaces such as the LFO in Marseille, 8 fab lab in Crest and 3615 Senor in Besançon provided us with the skills necessary to create our instruments and the knowledge needed to operate the 3D printers, laser cutters, CNC (computer numerical control) milling machines, design software, etc. available to us. Having gathered information on the needs of people with severe learning disabilities, we were able to develop new tools such as a simplified control running on open music software, or electric guitars stripped down to their most basic components made using a CNC milling machine.

Whenever we travel with our work, we try to make contact with the nearest fab lab. This is primarily to get their support – whenever possible we try to manufacture our designs locally to demonstrate how easy it is to download and use of open source designs – but also to introduce organizations likely to use these designs to fab labs and encourage them to work together. Disabled users often require specific tweaks and adaptations to meet their needs, and fab labs are invaluable when building new prototypes.

Fab labs and their philosophy of sharing have also greatly influenced our understanding of the design processes and the subsequent life of a finished design. Working with open source Arduino prototyping boards and sensors, for example, just as they were revolutionizing the Internet of Things, enabled us to bring our ideas to life without having to start from scratch. From that point on, the idea of sharing our own work became central to our practice. All of our instruments are available through a Creative Commons license for non-commercial use. This ethos is very much in line with our ambitions: offering instruments for artistic expression in a social context at minimal cost. At the end of 2017, we opened the SonicLab, our own fab lab focused on sound which is part of the Station Gare des Mines in Paris.

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15. \[There is still some way to go before open source solutions are widely available in the cultural and health sectors; music therapy professionals are not yet equipped to source blueprints for new tools online, and make sense of the ‘geek-centric’ documentation provided by the Open Source community.\]
Do you think the instruments, music-making processes and sounds developed by disability-led projects have a role to play in mainstream music making?

Absolutely. Simplifying instruments for users with disabilities by default results in universally accessible solutions. Providing people who would usually not be in a position to express themselves creatively with instruments can also produce remarkable results from an artistic point of view.

Although not our initial goal, we quickly saw our instruments being used outside disability circles. Jointly designed by social workers and musicians with the help of engineers and designers, our instruments are stripped down to their most basic components but maintain a real musicality.

We have progressively seen them used by young children, in music initiation programs, and in interactive contexts such as festivals. Universally accessible and simplified instruments offer a new way to think about music-making, less technical and increasingly focused on the pleasure of playing. The growing number of small and intuitive instruments for amateurs available on the commercial market is proof of this.

Several figures of the independent music scene are starting to form a small musique brute network. The highly recognized Sonic Protest festival in Paris, for example, now organizes an annual musique brute event. A number of other visionary festivals in France are beginning to sign groups that include musicians with severe learning disabilities.

What are your ambitions moving forwards? How would you like to see public and private sector partners support and engage with your activities?

To keep our curiosity alive, we remain active on many fronts. In addition to managing the fab lab on a day-to-day basis, curating exhibitions of digital art brut, designing new instruments and organizing workshops, concerts and conferences, we are in the process of developing training sessions for professionals.

Our charity is a sort of mini « think tank » and experimental laboratory where we test out new solutions around disability and culture. Our aim is to maintain this freedom and variation and not limit ourselves to a single activity. We do however have a number of projects in the pipeline that we hope to develop with private and public partners.

Through our work, we have established links with a number of art schools and music schools. We are convinced that these organizations will need to find ways to encourage people with disabilities, including autism and learning disabilities, to apply for places on their courses. “Brut” creativity brings into question the way music is taught in these institutions which are very much focused on technical virtuosity and a theoretical understanding of creativity. We are very excited about getting involved in these efforts to introduce people with learning disabilities into mainstream art courses. We are also keen to explore the role music schools might play in teaching introductory music courses, and how our instruments might fit into an inclusive offering.

With regards to our more advanced instrument designs, we are now looking to distribute these more widely. Before doing this we are seeking constructive feedback from a variety of users. Establishing a partnership with a foundation or a charity that works with a number of different organizations might be the best way to move forwards with this.

Figure 3: The BrutBox © BrutPop

BrutPop works with people with severe learning disabilities that have little to no experience of music. Those that have played instruments have usually been limited to percussion. Over the past ten years, through workshops and residencies in medical institutions, often over several months, we have had our eyes opened to the power of “musique brute”. We believe that, in the same way that art brut (or “outsider art”) has influenced generations of fine artists, musique brute has the potential to make a real mark on the music scene.
Part 2 Disability: a driver for creativity and innovation

The Jodi Awards as a prism of accessible digital culture

By Dr Ross Parry, Deputy Pro-Vice-Chancellor (Digital) and Associate Professor of Museum Studies, University of Leicester, and Chair of Trustees, Jodi Mattes Trust

In 2005, Dr Ross Parry was made a HIRF Innovations Fellow for his work on developing in-gallery digital media, and in 2009 was made a Tate Research Fellow. From 2008 to 2011, he was elected chair of the national Museums Computer Group, and from 2004 to 2010 co-convened the annual ‘UK Museums on the Web’ (UKMW) conferences. Ross is the author of Recoding the Museum: Digital Heritage and the Technologies of Change (Routledge 2007), the first major history of museum computing, and in 2010 published Museums in a Digital Age (Routledge). He is the co-editor of two books published in 2018: The Handbook of Museums, Media and Communication (Routledge); and Museum Thresholds: the Design and Media of Arrival (Routledge).

The ‘Jodi Awards’ as agent of change

For over a decade the ‘Jodi Awards’ have been celebrating cultural organizations that achieve excellence and push the boundaries of possibility for digital media in increasing participation for everyone. The inaugural awards took place in 2003, the European Year of Disabled People, and today they are administered by the Jodi Mattes Trust, a UK registered charity. The Jodi Awards are given in memory of Jodi Mattes (1973–2001), a tireless champion of equal access to culture. They celebrate her work in improving visitor experience to cultural activities for disabled people and in involving disabled people in program and project development.

A ‘prism’ of design, disability and digital

Today, the Jodi Awards provide us with a fascinating prism through which to reflect upon the development of accessible digital design within the museum and gallery sector over the last ten to fifteen years. The nominations, finalists and winners of the Awards offer insight into the progresses made within practice. To look at the Jodi Awards over the last decade is to see a story of growing responsiveness and agility in digital design as well as developing confidence in understanding the diversity and differences of disability recognized by the museum sector.
Refraction ‘Digital’
Back in 2005, a medium-sized regional museum such as Tyne and Wear Museums, were awarded for their accessible website interface. Four years later, organizations such as Imperial War Museums (in 2009) were recognized for progressive use of accessible portable devices. A year later, a Jodi was won by ‘New York Beyond Sight’ (in 2010) for its compelling design of mobile media for everyone. Then, in 2012, ‘Mencap Liverpool’ and the ‘Access to Heritage’ forum were celebrated for their creative exploration of a range of emergent embedded technologies. What this arc of finalists and winners of the Jodi Awards dramatize is a museum sector seeking to be responsive and agile in its design of digital media – following the leading edge of technology, from Web, to mobile, to the Internet of Things.

But with this growing confidence and agility we can also, concurrently, trace another narrative within the nominations and winners, of a museum and culture sector still managing a digital literacy deficit within its workforce. For example, the 2015 winners were Edinburgh City Libraries for its ‘Beginners iPad groups’ and ‘iPads games sessions’ for customers. A key power of Edinburgh’s project was in its co-ordination of regular training for staff and the building of a community of practice across practitioners in a number of other local authorities.

However, the Jodi was awarded because Edinburgh were the exception. It was singled out by the judges to provide inspiration and a role model to other institutions, as its approach was not the orthodoxy. Looking back on a decade of designing with disability in mind, we see a sector still lacking the core digital literacy for transformative change and delivery.

Refraction ‘Design’
Reflecting on the ways museums have used digital media to support the experience of disabled users and visitors, helps us to recognize and separate out important developments in approaches to ‘design’. For instance, Jodi Awards winners from 2009, Disability Arts Online, is a striking example of how, across the last decade, there has not just been a rise in design approaches that involve users, but crucially how the act of participation (beyond just ‘user testing’) can be substantively transformative to the lives of the people (the co-designers) involved. Like a growing number of Jodi Award winners that can be traced across this last decade, DAO reminds us of the empowerment of participatory design. Likewise, the nominations and citations of winners evidence a shifting discourse around the idea of the ‘sensory’. The theoretical informants of our applicants and our judges are from a new intellectual confidence (for museum studies at least) around ‘sense’ and ‘the body’.

The thirteen years of the Jodi Awards have taken place at the same time that the academy (and museology in particular) has followed what we might call a ‘sensory turn’ – a new sensitivity to thinking about embodiment, to a post-phenomenological encountering of the world, and the role of technology-mediated experience within this. The Jodi Awards demonstrate the substantive consequence of this sensory turn in museum studies.

Refraction ‘Disability’
It is still exceptional to see universal design principles being applied within museums. To conceive the museum (all its provisions, all of its programming, all of its touchpoints and encounters with its audiences) made accessible by design, and designed for universal use by default, is still not an orthodoxy within the sector. Consequently, the spectacular Canadian Museum for Human Rights, was recognized by the Jodi Awards in 2015, as an exemplar for the industry, what can be achieved when at an early phase in a museum’s creation a decision can be made to embrace an inclusive design methodology across all aspects of the museological practice. But as much as it was a celebration of this outstanding practice, this Jodi Award also signaled vividly how much the sector still needed to achieve.

Finally, the decade of Jodi Awards nominations, finalists, commendations and awards also animate a noticeable shift in the museum and culture sector’s conceptualization of disability. We can evidence across this decade a sector not only becoming more nuanced and informed about disability, but a sector speaking within an increased confidence about the diversity and differences within disability. A disproportionately large number of the awards’ early winners were in recognition of projects that designed with and for blind and partially sighted users and visitors.

This confidence in thinking about visual impairment extended in time to hearing impaired users and the Deaf community. It was then in its strategic partnership with the Rix Centre that the Jodi Award made a very public statement about the imperative to include learning disability into the orthodoxy of accessible design. Today, the Jodi Awards are characterized by a wider portfolio of nominations that look to a growing horizon of very different needs and users. Positively and encouragingly, the Awards’ ten-year catalogue suggests an understanding of disability that if not complete then at least growing, and if not pervasive then at least present.

The ‘Jodi Awards’ as evidence of change
As well as celebrating success and recognizing innovation, the Jodi Awards also serves as a body of work through which to understand evolving practice. The prism of the Jodis: calls out the need for responsiveness and agility in museum digital design; signals the digital literacy deficit within museums; evidences the empowerment of participatory design; demonstrates the substantive consequence of the sensory turn in museum studies; exposes the limited reach of universal design in museums; and calibrates the diversity and differences of disability increasingly recognized by the museum.
Part 2 Disability: a driver for creativity and innovation

Building accessibility into the MegaMind exhibition at the National Museum of Science and Technology in Sweden

Interview with Curator and Development Leader Mariana Back and Accessibility Manager Maria Olsson

Mariana Back has been active for some years in education, exhibitions, concepts and development, accessibility and research at the National Museum of Science and Technology. Mariana was part of the project group that created MegaMind, the new science center that opened in 2017. She was tasked with concept development and public engagement and was also responsible for assuring scientific relevance of the exhibition as a whole and for each component of the installation.

Maria Olsson has been responsible for the accessibility of the MegaMind science centre since January 2016. She has a background in pedagogy and special education skills from many years working in schools. Maria also has overall responsibility for developing and implementing new strategies that make the National Museum of Science and Technology an obvious place for all to visit – regardless of their differences.

Figure 4: The MegaMind interactive Science Center, CC-BY 2.5 SE Tekniska museet

16. Photos courtesy of Anna Gerdén
Considering the needs of users with disabilities had a significant impact on the way the new MegaMind science center was designed and laid out. What role does digital technology play in this new space?

Digital technology plays a very important role in MegaMind, particularly when considering the needs for users with disabilities. Each of the exhibition’s 43 installations is equipped with a digital informational display. These are essential to making both the content and the message of MegaMind accessible to as many users as possible. Using a touch screen, or a RFID card, visitors can choose their preferred way of accessing these displays (audio, sign language, etc.). This system was developed and tested in consultation with groups of users with very different needs. Several of the most popular installations were specifically produced with disabilities in mind. The unique and novel designs that have resulted have been very successful and are particularly appealing to visitors. One of the best examples of this is the installation “Paint with your Eyes.” Based on a digital tool developed by a Swedish company (Tobii AB), it is designed to help people who have difficulty moving their bodies. Even for the severely paralyzed, it is possible to access and communicate information with one’s eyes. In the exhibition, a special type of Kinect Camera that detects eye focus can be used by all visitors to paint the most beautiful patterns. These can be printed out and taken home as a souvenir.

![Figure 5: Augmented Reality Climbing Wall, CC-BY 2.5](image)

SE Anna Gerdén

There is also an installation where visitors can make digital sculptures in the air through gesture. For those with a hearing impairment—and perhaps also those in a wheelchair—vibrations of pleasant music can be felt throughout the process. Our recently installed Augmented Climbing Wall (Figure 5) is another example of digital technology making an installation more accessible and workable for all users. Visitors can decide where to position the video projection on the wall according to their needs and preferences.

How are disabled users involved in the design cycle and evaluation process?

From the very beginning of the MegaMind development process, we began working with a reference group composed of people representing organizations that support those with different needs. We have met frequently over the years and by now we know each other well. As soon as we need to test a new installation, we contact one of our partners and they create a group—composed of children and/or adults—with an invitation from MegaMind to test and evaluate the installation together. Admission is, of course, free and this is often much appreciated by participants.

We also work with companies that have expertise in the field. Often this boils down to staff members who are trained to represent specific disabilities or have personal experience of disability through a family member.

We have learned, among other things, that the more involved we are in partnerships for equality, accessibility and inclusive design, the more we truly understand different kinds of needs. This might sound like stating the obvious, but it really is a fact that we would like to stress. For the MegaMind project, one team member had the long-term responsibility for managing the collaboration with our reference group. This task was then passed on to another person and, over time, several of us became fully involved. Following the inauguration in January 2017, the Museum created a full time position focused on equality and accessibility with the remit to make progress on this within our own organization, and to better communicate with outside groups and visitors. This also ensured the continuation of the accessibility work undertaken as part of the new MegaMind center.

What is the feedback so far, particularly in relation to the digital component of MegaMind? What processes are in place to iron out any issues identified?

During the final phase of the project and a couple of months before MegaMind opened, we organized two group visits. Over one hundred people took part in each visit to help us evaluate the new installations. All staff members were equipped with tablets to interview the visitors. Many of them had been involved in the co-creation of one, or several, of the installations that were now being tested. In addition to an overall response that indicated that the space was “interesting and fun”, we also garnered useful comments on things to be adjusted before the opening.
The digital informational displays turned out to be very useful and much appreciated. During VIP nights for such organizations as the Asperger Foundation, we noted that they helped visitors to better comprehend the exhibition as a whole. “Make Music with your Whole Body”—a sculpture in which you work with others to open and close circuits in order to create computerized music—works very well for mixed audiences. One of our newest installations is an artwork created by Håkan Lidbo. It is an engaging experience where you can mix and program sound and light effects. It is very intuitive and works particularly well with illiterate visitors who can often be difficult to reach effectively. We are currently working on an exciting new MegaMind activity in which audio descriptions will be presented alongside a simple storytelling layout so that the information can be understood by as many visitors as possible.

Most of the issues identified are ironed out during the test period before an installation is opened to the public, but, of course, we continually run into new challenges. One issue that we are currently addressing is the overall noise levels that result from the stimulating and interactive environment that we have intentionally created as part of our mission to “stimulate and interest” and encourage visitors to “become more creative”. This environment can be very difficult to cope with for some users. We are exploring ways to tackle this tricky issue, and it is of our main focuses in the Sensory Lab, a new activity aimed at our youngest visitors.

What role does digital technology play in increasing access to the Science Museum’s collections beyond the physical museum space? How are the needs of disabled audiences built into these services?

Digital technologies are essential to give as many people as possible access to the Museum’s collections, particularly those that are not on display in the exhibitions. They also provide a means to enrich the collections through storytelling. Objects and associated stories can be found on the Museum’s “know more” pages and several other digital platforms. We are continuously photographing objects and digitizing material from our archives to make available online.

Our images and collection objects are also on display on the Digital Museum platform, which follows the Web Content Accessibility Guidelines (WCAG).

The information in our archives, and comments about images and objects in our collections have been added over many years. Originally collected for administrative purposes and for internal work related to the Museum’s collections, much of this information is scarcely worded. Today, we have the ambition to better describe objects in our collection and to put them in context so that they can be understood by everyone.

17. https://digitaltmuseum.org/
Part 2 Disability: a driver for creativity and innovation

Experimental musical instrument design with disabled musicians

By Gawain Hewitt, National Manager for Research and Development, Drake Music

Gawain Hewitt is a composer and music technologist who likes to work in the areas where technology and art meet. As an educator he specializes in working in non-mainstream settings, including with children expelled from school, young offenders, disabled children and those considered to have special educational needs (SEN). Seeking to share and develop practice, Gawain has taught and supported new professionals, as well as providing CPD within schools and at training courses in partnership with, among others, the Royal Academy of Music, Wigmore Hall, Drake Music, Sound Connections, Trinity Laban, Serious and Community Music. In 2013 Gawain was a contributing author to the Music Mark book Reaching Out: Music education with ‘hard to reach’ children and young people.

Drake Music and accessible music making

Drake Music is a UK-based charity specialized in the use of assistive technology to break down both physical and societal barriers to music-making for people of all ages. This is done through teaching, training and supporting artists and the development of new accessible musical instruments.

Three projects illustrate Drake Music’s work in this field and the importance of working with disabled musicians. Rather than focusing on the technology and the idea that the makers can solve problems for disabled people, these projects demonstrate that involving disabled musicians as co-designers from the outset can lead to really exciting developments.

Coding and hacking to support artistic development for disabled musicians

In 2012 Drake Music started a new program to explore whether the interest in making and coding as a creative and recreational pursuit could help improve the quality and diversity of musical instruments available to disabled musicians. The idea was to see whether hackathons might be a way to address the startling lack of innovation in musical instrument design and offer disabled musicians a much more varied and well-equipped music cupboard. An oboe is very different musically and culturally to an electric guitar or indeed a drum machine; our ambition was to provide disabled musicians with musical choice. Non-disabled people can make music in many ways and at many different levels. Drake Music’s vision is a world where disabled people have the same range of opportunities and a culture of integrated music-making, where disabled and non-disabled musicians work together as equals.

The initial designs that came out of these hackathons were very much concerned with what the team considered to be inaccessible, and consequently focused on the technology, and the idea that the makers could solve problems for disabled people. At around the same time, Drake Music had begun experimenting with a workshop to support artistic development for disabled musicians. This workshop, which was held in London and included around ten musicians, prompted the focus of the R&D program to shift to a user centered co-design model, where musicians presented the technologists with specific access issues. This is when the really exciting developments began to occur.
The MiMu gloves
In around 2012 Drake Music’s was approached by a professional musician, Kris Halpin, who had an established career. His access needs were beginning to seriously impact his music making for the first time and this was causing him to question whether he could even continue as a performing artist. Initially the team explored iPad apps, Skoog and the Soundbeam, but none of these met Kris’ needs or expectations for control and expression. Drake Music R&D was collaborating with the team behind a wearable music technology called the MiMu gloves at the time and it quickly became apparent that the MiMu Gloves were exactly what Kris needed. Designed by a musician (Imogen Heap), they were, by design, adaptable, allowing for precise calibration, and allowing for Kris’ impairment, and indeed for subsequent changes to his access needs. The complexity of the MiMu Gloves was a key factor in their success; like lots of musical instruments, they are hard to learn.

A conductor’s baton produced as a 3D print out
Drake’s R&D program, DMLab, was gaining some profile through this work with Kris and its hackathons program, and in 2015 conductor and composer James Rose got in touch. James conducts using his head and he needed a better baton with which to conduct, as the existing designs were too cumbersome, imprecise and inelegant. James wore glasses and it made sense to try and attach a baton directly to his glasses. The early prototype was made out of mains electronic components glued to an old glasses frame. The final version was 3d printed as a beautiful bespoke baton that fixes to James’ glasses frame using magnets. This marked a significant turn in James’ career, allowing him to study at the Royal Academy of Music on placement at the Bournemouth Symphony Orchestra and is a clear example of how good design can remove the barriers faced by disabled musicians and allow them to succeed on their own terms.

A virtual guitar app with a physical guitar body
The third project was developed with John Kelly, a musician, writer, actor and active campaigner for disability. In February 2015, John came to a meeting with what would prove to be a revolutionary idea. John has been playing guitar on and off for most of his life, but his impairment had prevented him from fretting the strings. Since 2012, John has been using an iPad, and then an iPhone to play guitar, using Apple’s Garageband app, and Thumbjam. John’s innovation was to combine the concept of Garageband’s virtual guitar with a physical guitar body and actual strings to gain in sensitivity and expressivity. Through a series of hackathons, the team made a guitar which responded to the vibrations of the strings, but allowed for note and chord selection using a phone interface. It was a moment of success for the team, but also an emotional moment – John’s lifelong dream had been realized – he could play guitar on an instrument that had the potential to match his musical vision.

Helping artists to achieve their artistic vision
All three projects show that a relatively small financial investment can make a huge difference to accessibility for disabled musicians. Working directly with disabled people is the only way to help them to achieve their artistic vision. It is important to resist the urge to solve access issues for disabled people, and instead to reach out and listen, co-design and collaborate. This approach has led to surprising and industry leading-results for Drake Music, but far more importantly, to equal opportunities for disabled musicians.
Part 2 Disability: a driver for creativity and innovation

Signes de Sens:
Designing differently for all

Interview with Marion Boistel, Project Manager at Signes de Sens

Marion Boistel gained a joint degree in Art History and Law, and a Masters degree in Museum Studies from the University of Artois. While studying, she worked as an outreach officer in several cultural organizations where she developed activities for disabled visitors. In 2016, she joined Signes de Sens as a project manager.

Tell us briefly about the origins of Signes de Sens, and about some of the organization’s key activities?

Founded in Lille in 2003, Signes des Sens works to provide innovative, accessible and educational tools for users of all abilities. We also provide consultancy for public and private organisations wishing to use technology to improve the accessibility of their offering.

At the time of its creation, there were very few educational tools available for people with hearing impairments, and those that did exist were far from inclusive. While working on a series of books designed to provide a shared family reading experience for children with hearing impairments, we made an interesting observation: the books were purchased not only by families with deaf children, but also by families who had children who struggled with reading for other reasons altogether. It became apparent that barriers to learning were not to be understood simply in terms of a particular disability, but rather in terms of a particular set of skills. Put another way, a disabled person in an accessible environment is an abled person and an abled person in an inaccessible environment is disabled.

Used in schools, public libraries, at home or at work, our solutions and services are designed with deaf users in mind, but reach out to a much larger, mainstream audience. In addition to our activities around publishing and digital solutions, we provide consultancy and training, and have developed a number of services to support French sign language users (LSF for Langue des Signes Française).
Today your focus has shifted from developing access solutions for the hearing impaired to offering universal solutions. Could you tell us a little about how your disability-focused application, Muséo+, introduced a new approach to visitor engagement that appeals to a wider audience than that for which it was originally intended?

As demonstrated by the vibration function on mobile phones (originally designed for users with hearing impairments), the TV remote control (for wheelchair users), or the electronic keyboard (for blind users), we believe that disability can be a powerful driver of innovation and result in "universal design" solutions that meet the needs of a far wider audience.

In 2010, Signes de Sens developed an application for the Musée du Quai Branly in Paris for children from 8 to 12 years old with hearing impairments. Like the books before it, it soon became apparent that the playful and interactive nature of the Muséo+ app, which included LSF, subtitles and voice-over for all video content, appealed to a far larger audience than the target audience. In 2012, a Muséo+ prototype was developed for the Palais des Beaux-Arts in Lille in partnership with three research centres (DeVisu, SCALab and Gericco). Intended to reduce levels of stress associated with entering and visiting museums for children with autism, it was tested on 75 children, of which 23 had no disability. Interviews, drawings, shadowing and observation exercises, eye-tracking sessions and an Affectiva emotion recognition bracelet were used to test the effectiveness of the application. It was found that levels of stress went down considerably for most children and that they became more involved and engaged, managing to work together and take ownership of the museum visit. Parents also remarked a change in the behaviour of their children who showed greater autonomy in the museum.

This tool, like others developed by Signes de Sens, was developed using an iterative approach in which ideas are tested and evaluated before being finalised and deployed. The application is still used in both museums today and has won several awards including a “Trophée de l’Accessibilité” in 2014, a “Sésame de l’accessibilité positive” in 2014, and the “Label de l’Observeur du design” in 2015.

Do you feel that you are able to compete directly with mainstream digital service providers, or are you forced to concentrate on accessibility-focused tenders?

At Signes de Sens, disability is the principle driver, but universal design is used to go above and beyond the needs of disabled users. We adapt our solutions to the specific ambitions and challenges faced by our clients, but involve users with disabilities in the design process from the outset to ensure that their needs are being met at all stages.

Do you feel that the concept of inclusive design is now mature in French museums? What steps would you like to see taken in order to make all digital services “born-accessible”?

In recent years, there has been significant progress in museums with regards to access, particularly physical access. Most museums are now accessible and increasingly have specific services, tools and members of staff in place to support disabled visitors. The situation is encouraging and there seems to be a marked resolve to create a more inclusive experience.

Accessible digital services, however, are less common, particularly outside Paris. Despite efforts to offer inclusive services, accessibility requirements are considered too late in the process without the necessary knowledge and training, and resolving issues or adding LSF once the solution is near completion can prove costly and complex.

While a number of national museums, such as the Musée de l’Homme and the Musée de la Marine, are beginning to raise the bar for accessible and inclusive design, there is some way to go. Accessibility requirements need to be integrated earlier on in the process; thinking about the needs of disabled users in the design phase of exhibitions and cultural and artistic events, and how digital tools and communication can be used to meet these needs, is paramount.
Part 3 From the visual to the textual - describing the arts in a digital world

VocalEyes: Increasing opportunities to experience and enjoy art and heritage through digital technologies

By Matthew Cock, Chief Executive, VocalEyes

Matthew Cock is a graduate in Art History (Edinburgh) and Fine Art (Glasgow School of Art). He joined VocalEyes in 2015, having worked for many years at the British Museum, as an editor, digital content manager and then head of the web team, responsible for the museum’s websites and digital projects, including gallery and mobile technology projects. Prior to that, he worked at the Victoria and Albert Museum as a curatorial assistant. Since 2008, Matthew has been a Trustee of the Jodi Mattes Trust that champions the accessibility of digital culture in the museums, libraries and archive sectors.

The art of experiencing culture

VocalEyes is an access organization working to increase opportunities for blind and partially sighted people to experience and enjoy the arts and cultural heritage in the UK.

“When I stand in a room before a sculpture made in the fifth century BC, a painting made 500 years ago, or a film installation made by a living artist, nothing stands between me and the original maker. I feel the form and weight of the object in a shared space, the vibration of colours on the canvas, the sweep of the brush, or the contour of the line on the sheet of the paper....

Sir Nicholas Serota, Foreword, Treasure Palaces (London, 2016)

Serota’s description of the experience of standing in a room with art is very powerful because it is inclusive of people who have visual impairments: descriptive language and guided touch can bring those visceral, haptic and spatial experiences and epiphanies to life just as powerfully as visual observation. And this gets to the heart of what we believe at VocalEyes: that blind and partially sighted people can get as much meaning, pleasure and epiphany from the arts as a sighted person.

Each year, our network of specialist audio describers, consultants and trainers delivers around 180 audio described (AD) theatre performances at around 75-100 theatres, and work with around 30-40 museums on a range of projects enabling access. Digital delivery runs throughout our work: for theatre, we produce ‘Audio Introductions’ of 5-15 minutes for each AD performance, which provide a general introduction to the performance, including descriptions of the set, costumes and characters, along with venue access information.

We encourage museums to offer similar AD venue introductions - practical information, such as how to get there and what to expect when you arrive, with descriptive information about the appearance and layout of the building.18

18. http://vocaleyes.co.uk/audio/audio-archive/?audioType=museums
We also develop recorded audio-descriptive guides for museum exhibitions and galleries, often with descriptive directions from one stop to the next. These are delivered on a variety of hardware, from traditional devices with physical keypads to smartphones with specially designed apps with text-to-speech software. We also encourage venues to make AD content available to stream or download from their website and SoundCloud, so people can use their own device and take control of their listening.

State of Museum Access

In December 2016, VocalEyes published a report presenting the results of an audit of the access information provided on 1700 UK museum websites: based on the premise that a lack of information contributed significantly to lower attendance among disabled people. We know, from a UK government survey, that there is ‘an attendance gap’ of 8.5% in the proportion of disabled and non-disabled visitors that visit museums and galleries and theatres.

When museum websites were first developed in the 1990s, access was interpreted predominantly in terms of physical access for wheelchair users. Over time, more museums have begun considering access needs more broadly, including those barriers faced by people who have visual impairments. However, our survey showed that there is still a long way to go:

- 27% of UK museums provide no online access information at all.
- A further 43% have online access information, but nothing relevant to blind and partially sighted people.
- Therefore, only 30% of UK museums provide any access information online for blind and partially sighted visitors.

Supporting the cultural sector in the production of accessible digital content

Alongside the report, VocalEyes publishes guidelines for venues to help them create or improve their website access information, and create accessible content.

Describing images

A major part of our museum program involves training staff to deliver AD tours in the physical space of the museum or heritage site, but there is little discussion or consideration for providing descriptions of the millions of images of museum objects online. While we have guidelines for alt text, there is a need for guidelines for audio descriptions of art and cultural heritage artefacts and environments, whether delivered live, recorded as audio, or provided as text.

It is important to consider two areas when creating audio description:

Structure: AD is a linear, temporal exchange, with the listener building a mental image or understanding (the concept of a mental image is problematic, many blind people report that they do not do this) over a period of time. Thus the order and structural logic of the description is important to its success. It is important to start broad (a life-size sculpture of a man, a painting in a gold frame showing a winter landscape) before going into detail.

The details are best threaded into a narrative. It is not necessary to describe every detail or aspect of the work. There is no need to be too systematic or formal: more weight can be given to the aspects of the work that draw attention, and the characteristics that separate the artefact or work from a generic version.

Multisensory language: One way of ensuring good audio description is to consider the many other senses through which the artefact, or the represented scene can be experienced. For example: a description of a seascape could include the waves lapping on the sides of boats, spray whipped up and crashing over a jetty, trees on the shore bent by the wind: all of these can be related to lived experience – through touch, hearing, balance, and even taste.

VocalEyes is currently a partner, along with the Museum of London and RNIB, in a University of Westminster PhD research project investigating museum audio description. Current experiments involve sighted and blind or partially sighted people listening to recorded ADs (scripted following different approaches to the language used) about documentary photographs in the Museum of London’s collection, and then completing a survey asking various questions about their recollection of the images and descriptions immediately afterwards, and one month later.

Good audio description is generally invisible, unobtrusive, and doesn’t seek to impose a particular interpretation on the listener. But it will always be a subjective and personal interpretation. Two different describers will focus on different aspects, use different descriptive language and create different experiences. The Museum of Contemporary Art, Chicago’s Coyote project recognizes this and seeks to make it a feature of their open description project.

Describing video

While some museums caption their videos for the benefit of people with hearing loss, very few provide access for blind and partially sighted people. If considered as part of the film-making process, the need for a separate AD track, which is not currently handled by mainstream video platforms, can be worked around: making sure speakers are introduced, or introduce themselves verbally, and that location and other important visual information are mentioned or described as part of the dialogue. This can be done elegantly and unobtrusively, without the need for commissioning a recorded AD track.

VocalEyes’ work on description, the findings of other research initiatives such as Coyote, and the huge knowledge of practitioners around the world, give us a firm grounding on which we can develop best practice and support the cultural sector in the production of accessible digital content.

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20. UK Government, Department of Culture, Media and Sport (DCMS), Taking Part 2016/17 quarter 2 statistical release https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/586932/Taking_Part_2016-17_Q2_Report.pdf. The survey does not break the figures down by different types of disability, but we believe that the proportion of blind and partially sighted people attending museums and galleries is likely to be far lower than the general average.
21. For an excellent overview of Audio Description of film, TV and theatre, I recommend Louise Fryer, An Introduction to Audio Description, A practical guide (Routledge, 2016). The Audio Description Association also has a reading list of other relevant literature http://audiodescription.co.uk/resources/adlib/.
22. J. Neves, ‘Descriptive guides, access to museums, cultural venues and heritage sites’ in A Remael, N Reviers, O Vercauteren (eds), Pictures painted in words: ADLAB Audio Description guidelines (University of Trier, 2015), pp. 68-71.
24. See Sina Bahram’s article in this paper.
Part 3  From the visual to the textual - describing the arts in a digital world

Coyote: Capturing the Power of Description in Museums

By Sina Bahram, President, Prime Access Consulting, Inc.

Sina Bahram is an accessibility consultant, researcher, speaker, and entrepreneur. He is the founder of Prime Access Consulting (PAC), an accessibility firm whose clients include technology startups, research labs, Fortune-1000 companies, and both private and nationally-funded museums. Sina has a strong background in computer science, holding undergraduate and graduate degrees in the field. In 2012, Sina was recognized as a White House Champion of Change by President Barack Obama for his work enabling users with disabilities to succeed in Science, Technology, Engineering, and Math (STEM) fields. In 2017, Sina served as the invited co-chair of the 2017 Museums and the Web conference.

Background
Like most inventions, the Coyote project was born out of both a need and a realization. The need was to make the Museum of Contemporary Art Chicago’s new website accessible to the widest possible audience. The realization was that visual description authoring would require more than a standard alternative text entry in a content management system (CMS). In 2015, Susan Chun and Anna Chiaretta Lavatelli from the Museum of Contemporary Art Chicago, and Sina Bahram from Prime Access Consulting, invented the Coyote platform to support the description of images on the MCA website. The Coyote platform has been used to describe close to 2,000 images, with over 300 of those images having both short and long descriptions.

Images of Artworks Are Not Decorative
MCA Chicago is committed to ensuring all visitors enjoy the museum’s website, regardless of ability. When it redesigned its website in 2015, the museum needed to conform to the Web Content Accessibility Guidelines (WCAG) v2.0 at level AAA to start, with fallbacks to level AA on a case-by-case basis. WCAG 2.0 dictates that non-decorative images must be described so that screen reader users and those who are unable to view images are able to understand all information presented on a webpage. For an art museum, images tend to be the most important piece of content on a webpage, so it was absolutely necessary to create visual descriptions so that everyone could experience the art presented there. It soon became apparent that these descriptions could not be accommodated by the standard HTML alt attribute; the museum needed to develop a robust workflow and learn how to pull the many voices of the museum together to write good descriptions.

Providing quality descriptions is central to museum publishing
The MCA has over 15,000 images to describe to date, and the number grows with each new exhibition. The team soon qualified the standard practice of adding visual descriptions to static text fields in the content management system (CMS) to be insufficient and too narrow in scope. To understand why a singular text field cannot suffice, one must appreciate what a healthy workflow around visual description looks like. At a minimum, the act of describing images — regardless of whether these descriptions are for an eyes-free audience — involves training, synthesis, rounds of feedback and revision, and approval. A single text field cannot capture this workflow.
Quality is also at the heart of the Coyote platform. The MCA’s publishing team follows a style guide for all published text, from books to web content, so why not apply the same rigor to visual descriptions? Behind this question lies a core truth that persons with disabilities do not always feel welcome or wanted in museums.

Respecting visitors with disabilities and their needs enough to develop high quality content on a par with all other published content is one of many ways that Coyote aims to support inclusivity. To this end, Coyote was developed to support a workflow for authoring descriptions that allows contributors to review and react to one another’s descriptions and, most importantly, an approval process in which editors give final sign-off before content is published.

Coyote at the MCA
At the MCA, a pan-institutional group of describers meets regularly for Coyote description sprints, known as “Donuts for Descriptions”, to work together to describe images on the museum’s website and develop institutional guidelines for description. The Coyote project has had a transformative effect at the museum, rallying support for not just web accessibility initiatives, but inclusion projects in general. Description work has brought staff members from around the museum together, creating rare opportunities for collaboration between, for example, visitor services staff and curators or educators. Describing has proven a valuable group experience, raising important questions about how we talk about art and creating a renewed empathy for visitors who may approach art in general and contemporary art in particular without a priori knowledge of art history and its jargon.

Making provision for multiple layers of description
Coyote supports a variety of different types of descriptions. The two standard description types are short descriptions and long descriptions. Short descriptions are usually sentence-length or shorter and are often mapped to the image’s alt attribute. Long descriptions provide a great deal more detail and tend to be at least a paragraph long at the MCA. However, Coyote does not impose or limit itself to these description types; if an institution wishes to generate poetic descriptions, spoken-word descriptions or audio descriptions, for example, a new description type can be created. This flexibility means that Coyote can serve as a central repository for descriptive content which can be used across platforms, from a website to an online game or a voice-based app.

How Coyote works
Coyote is a web application developed with the Ruby on Rails technology stack that runs in the cloud. The software recognizes and displays images from the organization’s website, but does not store these images within the application. Administrators can assign undescribed images to one or more describers. Describers log in to Coyote and access queues of described images, undescribed images, unapproved descriptions, approved descriptions, and so forth. The goal is not only to fix content issues prior to approval, but to facilitate good practice in visual description. Version histories act as an invaluable training mechanism as describers learn from the edits of others and can continuously improve their practice.

Coyote offers a modern RESTful API for programmatic access to the descriptions stored within the system. This API can be used in a great many contexts, such as a website, a mobile application, an interactive kiosk or an Alexa app. Furthermore, Coyote integrates Dublin Core and is a semantic web-aware application so that triplet-based relationships such as “this resource depicts George Washington,” or “this resource is a painting” can easily be captured. Such relationships are not just annotations, but participate fully in the rich search that Coyote offers. The system supports internationalization standards, bulk imports/exports, various mime types such as audio, rich metadata about resources in the system, groups so that artwork descriptions can be organized by exhibition, etc. and much more. The application itself is accessible, apart from the fact that it contains undescribed images. The reason for this commitment to accessibility in what, at first glance, may be considered a tool for sighted users alone is that accessible design is good design. Coyote, much like the website of the MCA, tries not to assume much about the functional abilities of the user. A blind person can review visual descriptions, and a dexterity-impaired museum professional who cannot use a mouse can author and approve descriptions.

Concluding Thoughts
Coyote is not simply a solution to a technical problem. It is a platform for researching best practice in image description, particularly in the complex context of the cultural sector. The software is part of a larger project that rethinks how description can support learning and the experience of creative works across cultural sectors. Additionally, the platform helps to differentiate between institution-specific and field-specific considerations regarding visual descriptions, and looks at how to tease apart difficult but meaningful observations around institutional voice. It investigates the usefulness of crowd-contributed descriptions of art, and many more ideas that seek to enhance the accessibility of our visual world for all people.
Part 3 From the visual to the textual - describing the arts in a digital world

From text to art: building accessibility into the JSTOR and Artstor digital archives

Interview with Lauren Trimble, User Advocacy and Accessibility Specialist, ITHAKA

Lauren joined ITHAKA in 2013, having worked for Bloomsbury Publishing as a marketer. At JSTOR, she has pioneered a regular process of accessibility evaluation, future implementation and issue prioritization for development teams. She has also trained ITHAKA staff on accessibility and served as the accessibility liaison between JSTOR and university librarians. She holds an MA in Creative Writing from the University of London and works extensively with 826Michigan, a non-profit that enables school age children of all abilities to write skillfully.

What is ITHAKA and why is it essential to ensure that your services are fully accessible?

ITHAKA is a not-for-profit organization committed to improving education through the use of digital technology. We make academic journals, e-books, art images, and primary sources available online to secondary schools, universities, museums, societies, specialized institutions and individuals. ITHAKA includes a range of products including JSTOR (a digital library of journals, books and primary sources) and Artstor (a digital library of images and media).

Both JSTOR and Artstor have users ranging from undergraduates and librarians to high school students and unaffiliated researchers. Helping these institutions and their students make the best use of emerging technology is core to our mission. Given the broad range of user type and our aim to support the global advancement of teaching and research, it’s essential that these technologies, including ITHAKA’s ever-evolving content platforms, don’t leave anyone behind. Regardless of mission, and especially from the perspective of public education, it’s simply the right thing to do.

Building accessibility into a visual art archive like ARTSTOR brings particular challenges. Can you tell us about some of these challenges, and how you have attempted to tackle them?

Artstor has over 2 million images that include photography, painting, sculpture, manuscripts and decorative arts. These images come from a wide variety of universities, individual artists and museum contributors, many of which have individualized agreements with us. For users with disabilities, the metadata we use to categorize and describe these images is important to understanding the content in Artstor. That metadata is not currently uniform.
We will need to systematically describe the non-textual content on Artstor. We’ll also likely need to change how we ingest content from contributors/publishers, and devise a useful and uniform means of describing images. Artstor has over 2 million images and processing them will constitute an enormous amount of work. We have the capacity and the will to do this work and intend to begin the process of organizing and systematically planning for it.

To start in this direction, we hope to offer an on-demand description service for Artstor users. This will allow users to request alternative descriptions for specific desired works in Artstor that can be read via screen reader and used with assistive technology. This will hopefully begin the process of training staff for accessible descriptions, raise greater awareness of the issue and allow us to better scope our work.

Can you tell us about your experiments with the D. James Dee Archive?

The Artstor Arcade project was developed by the Artstor Labs team and ran from the fall of 2015 to the fall of 2016. The idea was to crowdsource metadata for an extensive number of unlabeled photos from the archive of a prominent New York photographer, D. James Dee. He had covered the SoHo art scene in the latter half of the 20th century and had amassed over 250,000 negatives. Upon his retirement, the photos were either going to be stored and archived by a third party or dumped in the trash. To preserve these images, Labs developed the Artstor Arcade, an interface allowing users to access images and enter basic data (i.e., creator, title, date, medium, and exhibition history). Entering data accumulated points and users could move through a series of levels, acquiring titles ranging from “flâneur” and “connoisseur” to “apprentice” and “master.” Six months after launch, there were 208 participants and 2,916 cataloged entries. The data the participants contributed wasn’t flawless but, given the experimental nature of the program, Labs decided to accept imperfect data, on the premise that any gaps could be fleshed out later. After filtering and fixing what they could, Labs was left with a publishable data set.

Do you think that, in addition to crowdsourcing, there are any other mechanisms, tools or methodologies that might help visual content providers to make textual alternatives more readily available?

The accessibility implications of crowdsourcing are interesting, especially from an engagement perspective. The Museum of Contemporary Art, Chicago has reported that staff found that describing the art through the Coyote platform from an accessibility standpoint deepened their perspective of it, giving even art they were familiar with new meaning. I think the best solutions will allow for greater engagement with the subject material and, in that vein, I see a lot of potential in crowd sourcing. Allowing users to interact with art, and affect it in a meaningful way seems like a great way to encourage greater public participation with the fine arts.
Part 4 Developing specific measures to increase access for all

Building accessible media at France Télévisions

Interview with Matthieu Parmentier, R&D Projects Manager at France Télévisions

Matthieu Parmentier holds two degrees in sound recording and video post-production and a masters degree in audio-visual research from Toulouse University. He started his audio career recording classical music CDs. He joined France Televisions in 1999 as a sound engineer for live programs. He was responsible for sound recording, video editing and outdoor satellite transmissions for the news department before being appointed manager for 3D audio and Ultra High Definition (UHD) video development projects in 2008.

How does France Télévisions ensure that its output is accessible to as wide an audience as possible?

France Televisions is the French public TV broadcaster in charge of five national channels, 49 local channels and 9 overseas TV and radio channels. All of its programs are available live and on demand through IP networks over connected TV, PC, smartphones, tablets and video game consoles.

France Télévisions first and foremost ensures that its outputs meet the engagements and quality assurance standards laid out by the French national television regulator, the Conseil supérieur de l’audiovisuel (CSA). The CSA stipulates that all national programs are subtitled, that audio-description is available for at least one new program per day, and that three news programs are available each day in French sign language. Beyond this, France Televisions is engaged in a number of working groups to propose and/or support new ways to increase the accessibility of content while widening audiences likely to use this content. These efforts start in the early stages of production and must be taken into consideration right up until the point of delivery. The idea is to develop increasingly intelligent tools to raise the quality while lowering the costs of delivering accessible solutions.

What steps have been taken to encourage discussion beyond the organization and within the wider telecommunications industry?

The marked increase in audiences watching content in a non-linear fashion via streaming has had two significant consequences. Heterogeneous new networks are now used to reach the same audience as before. Accessibility requirements are greater than ever, as a wider audience benefits from standard accessibility features such as subtitles (used by those wishing to view a video on public transport for example). As a public broadcaster, France Télévisions develops and delivers its own multi-support players and distribution networks without having to wait for accessibility features to become part of industry standards or for TV manufacturers to accommodate new accessibility features. This makes it possible to develop specific accessibility features that can be rolled out independently.
These two changes have led to a new paradigm whereby digital delivery sets the agenda, and TV manufacturers are forced to adapt, looking to the web industry for guidance on the most effective and user-friendly interfaces and settings. In recognition of this shift, France Télévisions has been leading a collaborative project called Media4Dplayer which has sought to create and test a fully accessible web player prototype, which is based on over 25 proofs of concept.

Completed in June 2016, the Media4DPlayer project involved four partners who were all set to gain from a high performance web player with advanced accessibility features. The project objective was to create an open source player that would be accessible to all. Users have the option to:
- activate, zoom in and out and move a screen featuring a sign-language interpreter to a preferred position on the screen;
- personalize subtitles (position, size, color, fonts and transparency);
- activate audio-description;
- adjust the volume of voice-over to avoid interference.

Do you work closely with national and international accessibility standards bodies and/or users with disabilities?

Unfortunately we are not sufficiently staffed to push our developments as far as we would like, particularly within international standard bodies such as the World Wide Web Consortium or the International Telecommunication Union. France Télévisions has seen successive staff cuts over the past eight years and has struggled to fill new roles focused on web-based developments and standards; the biggest audience and revenue stream is still driven by terrestrial TV.

Please could you talk us through some of the key R&D projects that you are working on that are set to improve access to audio-visual content for people with disabilities?

We are currently working on tools to sharpen sound quality, which is a mandatory feature for hard of hearing people, but also for an increasing number of users viewing content in difficult conditions such as a room with an echo or background noise, or through poor quality speakers. Providing a tool to sharpen sound quality would improve the quality of experience for a great many users.
Part 4 Developing specific measures to increase access for all

Digital accessibility at the Centre des Monuments Nationaux

Interview with Alexandra Dromard, Chef du département des publics - Centre des monuments nationaux

Alexandra Dromard joined the Centre des monuments nationaux in 2012. With a degree in Art History and digital project management, she began as a multimedia producer on an exhibition organized by the Louvre and the High Museum of Art in Atlanta. She worked for the Cité des Sciences et de l’Industrie before returning to the Louvre to work for the new department of Islamic Art which opened in September 2012. She is a member of the New Technologies Chapter of the Réunion des Etablissements Culturels pour l’Accessibilité (RECA).

Could you present some of the digital projects that the Centre des Monuments Nationaux has developed to increase access to its monuments for people with disabilities?

The Centre des Monuments Nationaux (CMN) has been using digital technologies to support visitor engagement for some time. In recent years, digital solutions have been developed to increase access to monuments and visitor services for disabled visitors.

The CMN’s website is around 10 years old and is currently being updated to ensure it meets current standards and user requirements. It provides information on our offering of accessible services and monuments: how to get there, services available onsite and other content to help prepare a visit.

Because many monuments present specific challenges to people with limited mobility, the CMN began to develop virtual reality tours for some of its sites. However, as disabled visitors rarely visit sites alone, it became clear that these VR tours needed to work for groups of visitors with different abilities wishing to visit a site together. With this in mind, the team at one of the CMN’s renaissance properties with no lift access, the Château d’Oiron, introduced a robot called Norio. Visitors with limited mobility are able to control the robot remotely from the ground floor. Equipped with a camera and a screen, Norio allows the wheelchair user to accompany the rest of the group as they visit the top floor.

Figure 8: Norio at the Château d’Oiron ©Centre des Monuments Nationaux
French sign language (LSF) translations are now available for all introductory films on show in all our sites, and also included in all visitor applications. Digital display screens installed in our properties in Champs-sur-Marne and Châteaudun also include LSF, high contrast options and resizable texts.

The CMN tends to develop specific services for disabled users rather than seeking to address all user needs in the organization’s mainstream offering. Can you explain the reasons for this approach?

Where possible, the CMN tries to offer the most inclusive visitor experience possible. In France, access policy considers that people with disabilities should be able to access all services independently. Where possible, we focus on “universal design” solutions that meet as many needs as possible. Our visitor engagement officers have also been trained in accessibility and all of our offerings are reviewed for their accessibility.

However, some content and services can be more difficult to access for some users with disabilities, and meeting the needs of all users in a single solution can prove challenging. It is therefore sometimes necessary to develop specific services. Whether it be available online, via an app or onsite, it is necessary to consider the time needed by users to get to grips with the solution.

Much of the CMN’s digital content and services are developed in-house. How do you ensure that accessibility requirements are factored into all projects?

The CMN has a centralized digital media department so that all monuments, big or small, benefit from the same quality of service. A series of frameworks have been developed for mobile visitor apps, websites and onsite digital display panels. Accessibility requirements have, for the most part, been factored into these frameworks, and we have the flexibility to update and improve following user testing sessions and visitor feedback. We try to work with digital accessibility specialists who have a solid understanding of access requirements, but at the time of developing these frameworks, it proved difficult to identify and recruit professionals who were able to support us not only with web accessibility, but also mobile and touch screen accessibility. We therefore opted to build on and improve these frameworks as we go along by working closely with disability organizations and professionals who are emerging in this field. Digital technology evolves at a great speed so we are also working closely with universities to raise awareness among future graduates on digital accessibility requirements. Each day our users and partners help us to get a clearer idea of needs and expectations and we are striving to provide a quality service for all of our visitors.

How do you involve users with disabilities in the design cycle and evaluation of new digital products and services?

The CMN works in partnership with five French disability organizations representing people with visual impairments (Association Valentin Haüy), hearing impairments (Fédération nationale des sourds de France), physical impairments (Association des paralysés de France and the Groupement pour l’insertion des personnes handicapées physiques), and learning disabilities (Union nationale des associations de personnes handicapées mentales, de leurs parents et amis). We have established close links with these national charities and call upon them as soon as we are seeking to develop new cultural services. We work with charity representatives and with focus groups, both on physical and digital products and services.

For example, at the end of March 2018 the refurbished visitor center will be opening at the megalithic complex of Carnac in Brittany. Among the many digital interactives on display, we will be unveiling a digital interactive specifically designed to meet the needs of users with a number of disabilities. The design, interface and content of the final product is a direct result of the focus groups held with our partnering charities. Participants tested a prototype and gave detailed feedback on the device and its use, which enabled the CMN to improve its overall accessibility.
Conclusion

As the articles in this white paper demonstrate, the cultural sector is beginning to embrace a broader understanding of disability. With the support of non-profit organizations and public sector bodies, and through closer collaboration with user groups, organizations are working to provide a more generous and inclusive cultural offering. In this context, digital technologies provide unprecedented opportunities to reach out and involve new audiences.

In parallel, new practices are emerging in which expertise, energy and resource is pooled to support the development of accessible products and services, not purely in order to meet legal requirements but simply because the individuals and organizations involved believe it to be “the right thing to do”. The sector is increasingly awakening to the notion that, in the digital age, “sharing is caring”.

There can be little doubt that efforts to meet the needs and expectations of disabled users raise the bar for all users. Improving the overall quality, granularity and availability of digital products and services results in wider reach and greater usability. Born-accessible books, instruments, videos, shows, exhibitions and cultural services are better books, instruments, videos, shows, exhibitions and cultural services.

However, it is not solely the end user that benefits from this shift in focus. Nor are the considerations that lead to accessible solutions purely technical. Initiatives that celebrate and champion accessible service provision - still not the orthodoxy within the sector - highlight just how engaging, transformative and rewarding these efforts can be. Solutions such as Coyote and those developed by BrutPop and Drake Music prompt cultural sector professionals to reengage with their discipline and question how we as a society approach creativity and discussions around art and cultural artefacts.

Digital accessibility holds great promise, not only to support greater participation for people with disabilities, but also to challenge the rationale and preconceptions that shape our cultural landscape.
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